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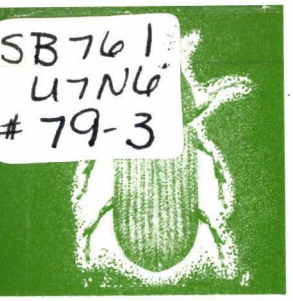

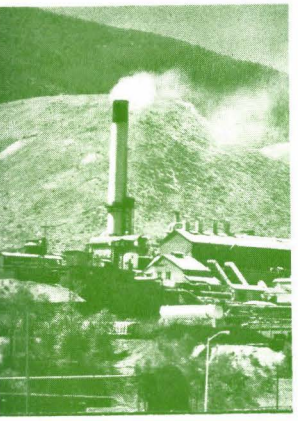

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REEVALUATION OF LARCH CASEBEARER PARASITES IN CASEBEARER-INFESTED STANDS OF REGION I

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INTRODUCTION

The larch casebearer, Coleophora laricella (Hubner) was first reported attacking western larch, Larix occidentalis, in Idaho in 1957 (Denton, 1958), 71 years after its introduction into Massachusetts from Europe. The apparent successful regulation of this insect in the eastern U.S. by introduced parasites prompted biological control attempts in the West. Introduction of Agathis pumila (Ratzeburg), considered one of the most significant parasites in the East, was emphasized following a period of laboratory and field evaluations. Between 1966 and 1969, Forest Insect & Disease Management released A. pumila at 378 locations in Washington, Idaho, and Montana. Most releases consisted of attaching parasitized casebearer-infested branches to lower branches of three infested trees at each release location. Evaluations made between 1967 and 1972 verified the presence of A. pumila on 127 plots out of 270 examined and percent parasitism ranged from 0.1 to 90 percent.

METHODS

Larch casebearer development was monitored in infested areas, and sampling began when most larvae had pupated. Sampling began on May 16 and ended June 10, 1977. Wherever possible, the exact trees where parasites were first released, were sampled. Some release trees could not be positively identified; in those cases samples were taken from nearby trees based on the detailed maps available for each plot. In nearly all cases samples were taken within 0.1 mile of the release plot center. Random plots were also sampled in the infested area.

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Branches were collected from the midcrown of at least three trees, i.e. the release trees or substitutions, on each plot, placed in labeled paper bags, and brought to the laboratory. No special provisions were made to keep the samples cool in the field, but they were stored at approximately 4.5°C in a walk-in cooler at the laboratory.

Approximately 100 casebearer pupae from each plot sampled were placed in rearing. Each pupa was placed separately in a #000 gelatin capsule, and nine to ten capsules were placed in a Petri dish.

Dishes were incubated at 20°C until completion of parasite emergence. A malfunction caused below freezing temperatures in one incubator twice during the incubation period, but there was no noticeable effect on emergence.

Parasites were identified at the USDA-FS Intermountain Forest and Range Experiment Station and percent parasitism determined. In cases where neither a moth nor parasite emerged, the pupal case was cleared in a 10 percent solution of KOH and a species determination made.

RESULTS

Parasites collected in each state are listed in order of importance in Table 1. A. pumila parasitized 12.5 percent of the casebearer pupae and Chrysocharis laricinellae (Ratzeburg) parasitized 8.3 percent. A. pumila was found in samples from seven random plots and 62 release plots. These included 33 release plots which were sampled in previous years. Within these 33 plots parasitism by A. pumila had increased in 27 and declined in six. C. laricinellae was the most widespread parasite, and was found on 59 release plots and 19 random plots.

Table 1. Summary of Larch Casebearer Parasite Survey.

State	No. Plots	No. Casebearer	Parasites Recovered	(No.)	% Parasitism
Agathis pumila release plots					
Montana	68	5,953	*Agathis pumila*	(967)	16.24
			Chrysocharis sp.	(594)	9.98
			Spilochalcis sp.	(36)	.60
			Bracon pygmaeus	(18)	.30
			Pristomerus sp.	(12)	.20
			Gelis sp.	(5)	.08
			Mesopolobus sp.	(4)	.07
			Other	(26)	1.00
			Total	1,662	27.92%
Idaho	36	3,259	*Agathis pumila*	(430)	13.19
			Chrysocharis sp.	(113)	3.47
			Spilochalcis sp.	(61)	1.87
			Bracon pygmaeus	(15)	.46
			Mesopolobus sp.	(30)	.92
			Pristomerus sp.	(5)	.15
			Gelis sp.	(17)	.52
			Other	(10)	.31
			Total	681	20.90%
Random plots					
Montana	13	1,299	*Agathis pumila*	(1)	.07
			Chrysocharis sp.	(218)	16.78
			Mesopolobus sp.	(14)	1.07
			Bracon pygmaeus	(1)	.07
			Gelis sp.	(1)	.07
			Spilochalcis sp.	(1)	.07
			Total	236	18.17%
Idaho	12	1,201	*Agathis pumila*	(68)	5.66
			Chrysocharis sp.	(44)	3.66
			Mesopolobus sp.	(14)	1.17
			Bracon pygmaeus	(10)	0.83
			Spilochalcis sp.	(2)	0.17
			Gelis sp.	(4)	0.33
			Other	(1)	0.08
			Total	143	11.91
Grand Total	129	11,712		2,722	23.24%

LITERATURE

Denton, R.E. 1958. The larch casebearer in Idaho - a new defoliation record for western forests. USDA, Forest Service, Intermountain Forest and Range Experiment Station. Research Note 51.